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POLITE ARTS.

No. I.

The GOLD ISIS MEDAL was presented to Mr. FRANCIS PARKYN, 2, Bedford Street, Bedford Row, for his Instrument for Making a Perspective Drawing of any Building from a Given Plan; a drawing of which Instrument has been placed in the Society's Repository.

PLATE I. fig. 1, represents the whole instrument in use; *aa*, a ground plan; *bb*, a perspective drawing made from it; *c*, the observer's station; on the plane of the picture, between him and the plan, is secured by pins a very straight grooved bar *dd* for a part of the instrument to slide in; *ee*, the principal bar, having a tracing-point resting on the corner of the plan *aa*; this bar represents a horizontal ray from the plan to the observer's station *c*, and if used as a ruler would project the plan on the plane of the picture *d*; but this part of the operation is transferred to a sliding-rod *ff* (at one end of which is a marking-point, or pencil), by means of the sliding-carriage *gh*. So far it only transfers a geometrical projection to another place. The important addition is now to be described, by which, whilst it is projecting the plan, it will place it in true perspective, at as many altitudes as we choose above

or below the horizon. The station-point c represents either the feet or the ground under the operator : to see the plan in perspective, he chooses his height above it. In nature, this must be vertical ; but here it only requires to be at right angles to the main bar ee . Fig. 2 shews a stud c , with a small sharp screw under it ; this is screwed into the board at the place determined on for the station c . The T square ijj has a hole to fit on the station-stud c , and three rollers under it, to let it move freely round the stud ; it also has twelve studs along its height. Though this lies down, it represents a vertical standard, for on it is chosen the operator's height. This bar is kept at right angles with e , by having two studs on it at jj , which enter a groove along the under-side of the bar ee , always representing a horizontal line from plan to station, to which in nature the standard and plane of the picture would be perpendicular. It is requisite to keep the standard i at right angles to e , and also to have a representative of a vertical line in the plane of the picture that shall keep at right angles to e during all its motions right and left ; k is that representative. Its foot is kept to the plane by having a stud under it to traverse the groove d ; and two studs on its angular limb, entering a groove along the under side of e , preserve it at right angles ; two studs on jj also keep the standard right. One end of g is jointed to k at one stud, and has another stud under its other end, by which it can only slide right and left in dd , and keep the rod f always at right angles to it, so as to move parallel. The bar e has a divided and grooved limb l ; in this is clamped, as at s , one end of a grooved bar mm . This represents the visual ray from the plan to the observer's eye ; therefore its other end is laid on the stud in the standard i , which is chosen to represent the

observer's height. It might be expected that this ray ought to proceed from the tracer on the plan; but it makes no difference in its performance, whether placed nearer or farther from the bar *e*, so long as it keeps the same angle; the bar *m*, by its under groove, lays hold of a stud *n*, which can slide in the groove *k*; it may be called the perspective stud, for its motion being communicated lengthwise to the rod *ff*, determines the perspective. The manner this stud *n* is connected with the sliding rod *f* is best shewn in fig. 3, where the chain and rollers are shewn separate; *n*, the stud, its base, forms one link of the chain *ooo*, so as to unite its ends; this passes round the three rollers *ppp*, and between the two very small ones at *q*; these are placed exactly over the stud which traverses the groove *d* and the joint of *k* and *g*, so that bending the joint may not affect the chain. This chain passes through a cut made across the screw-hole in the clamp *r*; it is then followed by the screw, and bound fast at the required place; the rod *f* passes through this clamp, and is bound fast by another screw at top. The clamp is flat at bottom, as shewn in fig. 4, in order to slide well on the bar *h*, and prevent the rod from turning round. Now it is evident, that moving the stud *n* left or right will move the rod *f* exactly so much up or down; and as the stud *n* always rises or falls vertically in the plane of the picture *k* exactly as the visual ray *m* directs it, in looking, as it were, through the stud *n* at the different parts of the plan, so the point *b* will rise or fall, and mark that part at its exact perspective height, and place the connecting bar *g*, giving to the rod *f* exactly the same motion laterally as the bar *e* has along *dd*.

It will be evident, that if the bar *m* was fixed parallel to *ee* by clamping the stud *s* opposite the mark *l*, it

would carry the stud *n* with it, and raise the point *b* up to the horizon *t*; and then, on moving the bar *ee* to and fro, or any way over the plan, would only cause the bar *m* to slide over the stud *n*, and not move it; therefore the point *b* could have no up-and-down-motion to make it deviate from the horizon; it would then project the plan on the horizon. Now, on sliding the stud from the mark *l* to its place *s*, this alone will move the point or pencil down from the horizon *t* to its present place *b*; then, on moving the tracer from the corner *a* to any other part of the plan (the dotted lines shewing such motion of the instrument), it must go nearer to or farther from the plane *d*; and this will slide the visual bar *m* over the chain-stud *n*, and move it that little nearer to or farther from the joint under the bar *e*, and accordingly will raise or depress the point at *b*; and thus the eye, having not an invisible ray or beam to see by, but a solid and tangible beam *m m*, by which to look at the plan, this beam moves the point *b* higher or lower, according as the tracer is moved to a farther or nearer part of the plan.

Any further depression of the stud *s* would give a base still lower to the building *b*; and any intermediate elevations of that stud will give the intermediate lines or stories; and still farther raising the stud *n*, by moving the clamp *s* to any division above the mark *l*, will raise the point *b* above the horizon, and give the upper part of the building; the same plan serving for every elevation. In nature, the plan must be raised to each successive story; but here, raising the end *s* of the bar *m* produces that very effect; so the tracer repeats its passage over the same plan for each elevation, whether above or below the horizon. There are here only two divisions left above the present horizon-mark *l*; if more are wanted above the

horizon, the whole bar *mm* is to be dropped nearer to *ee*; then unclamp the chain at *r*, that it may not move the rod *f*; place the bar *m* on any lower stud in the standard *i*, and that will carry the horizon-mark *l* so many divisions lower: the clamp *s* is also to be moved as much, in order to leave the bar *m* parallel with its former station. Now clamp the chain fast, and proceed, as before, to use the extra heights thus given; for if the bar *m* were placed on the lowest stud *i*, it would give nearly all the divisions *ls* for heights above the horizon; and placing it on the highest stud *i* would give them all for depths below the horizon. Thus the whole extent of the machine may go below the horizon, and afterwards the whole may be used above it, giving double range.

The same letters of reference refer to the details in the other figures. Fig. 5 is an end view of the bar *h*, shewing a roller under it, and the chain-roller on it, with one of the rings through which the rod *f* slides. Fig. 6 is a side view of rod *f*; it has an ivory foot *u* near the spring-socket: the spring within keeps the point up till pressed down by the finger to mark the place. Fig. 7 is the joint separated that unites *g* and *k*. Fig. 8 is a section through *k*, shewing the stud under the joint which traverses the groove *d*, the frame above the joint holding the two very small rollers, and the two studs *vv* on which the bar *e* slides; also an end view of the sliding-stud *n*. Fig. 9 is an edge view of the bars *g* and *k*, upside-down, to correspond with fig. 7. The small rollers in the frame on which the stud *v* is fixed have each two grooves opposite each other; the chain *o* passes the upper groove of one pulley, and the opposite part of the chain passes the lower groove of the other, in order to let the chain pass over from one pulley to the other, according as the joint of

g and *k* may be bent. Fig. 10 is an end view of standard *i*, shewing the two studs *jj* on it, the three rollers under it, and the station-stud *c*. Fig. 11 is an edge view of the bar *e*, shewing the tracer *a*, and ivory foot near it: there are two of these feet, one at each end of the limb *b*. Fig. 12 is an edge view of bar *m m*, shewing the joint on which it turns at bottom of the screw *s*. This screw has a flat part to slide in the groove of the limb *b*; it rises half-through. The collet also has a flat part going the other half through, and an index *w*, which nearly touches the divisions *l s*, seen in fig. 1, near any of which it is bound fast by a screw-nut at top.

There are four different heights in which the bars lie so as to clear each other. The bar *d d* is lowest; in the second plane lie *k, g, and h*, and *i, j, j*; in the third lie *m m*; in the fourth and last, *l, e, e*. The different rollers, feet, and studs, are therefore made of proper heights to keep all the bars level.

No. II.

DISCOVERY OF LITHOGRAPHIC LIMESTONE IN INDIA.

The Thanks of the Society were voted to ROBERT SMITH, Esq. of Calcutta, for his Communication respecting the Lithographic Limestone of Jaisalmír, a small sample of which, together with various Lithographic Impressions, are in the Society's Repository.

SIR,

Calcutta, 25th March, 1831.

I AM not sure that I am strictly in rule in addressing you thus; but, considering that the Society have been the

CORRIGENDA IN FIRST PART OF VOL. L.

- Page 11, 5 lines from bottom, for height, and place the connecting bar g, read height and place, the connecting bar g.*
- 13, *line 2, for ; then unclamp read , first unclamping.*
- 14, *5 and 8, for b read l.*
- *16, for lie read lies the bar.*
- 26, *8, after grs. add of morphia.*
- 33, *16, dele working.*
- 39, *3, for latter read former.*
- *10, after to add air and.*
- 53, *8, 11, 27, 31, for bar or bars read arm or arms.*
- *14, for 2 read l.*
- 55, *21, dele subsequently.*
- 57, *14, dele and.*
- 58, *3 from bottom, for c c, which is a front, read which is a front view, c c.*
- 59, *5 from bottom, dele thrown back and, and insert the same in the next following line, after compartment.*
- 63, *5, for covered read high-pressure.*
- 69, *5 from bottom, for right angles read the angle.*
- 84, *9, after horns insert e.*
- 86, *12 from bottom, dele (as in figure 15).*
- 90, *1 and 2, omit alternate.*
- *6, omit half the planks retain their original thickness, and.*
- *9, omit half.*
- 91, *6 from bottom, after separate add in perspective.*
- , *last line, after Fig. 1 add the two other arms of this knee are horizontal, and at right angles to each other, one of them being parallel to the side of the ship, and the other perpendicular to it.*
- 99, *last line, for 1 read 2.*
- 100, *line 1, for 2 read 1.*
- 108, *6 from bottom, read the first part of this sentence as follows :*
A straight bar projects from the hinder part of the plate f, and to this is attached a crank g in such a position that the end of its lower arm shall move vertically whenever the bar attached to f is moved horizontally.
- 109, *4, for ring, twice repeated, read swivel.*
- 110, *23, for the sentence the weight to end of g, substitute the weight l on the spindle i balances the spiral m, the weight o on the crank balances the copper plate and horizontal bar, and another weight at the right hand end of the bar g (not shewn in the engraving), balances the weight of the wire.*
- 144, *4, after entire add machine.*
- 155, *11 from bottom, for shave read have.*